Addressing the Barriers to Distributed Resources in Texas

California Energy Commission
Energy Facility Siting Committee Workshop
on Distributed Generation Interconnection Rules

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Topics

- Electric demand and supply in Texas
- Origins of DG interconnection activity
- Development of interconnection guidelines
- Adoption of DG regulations
- Remaining issues

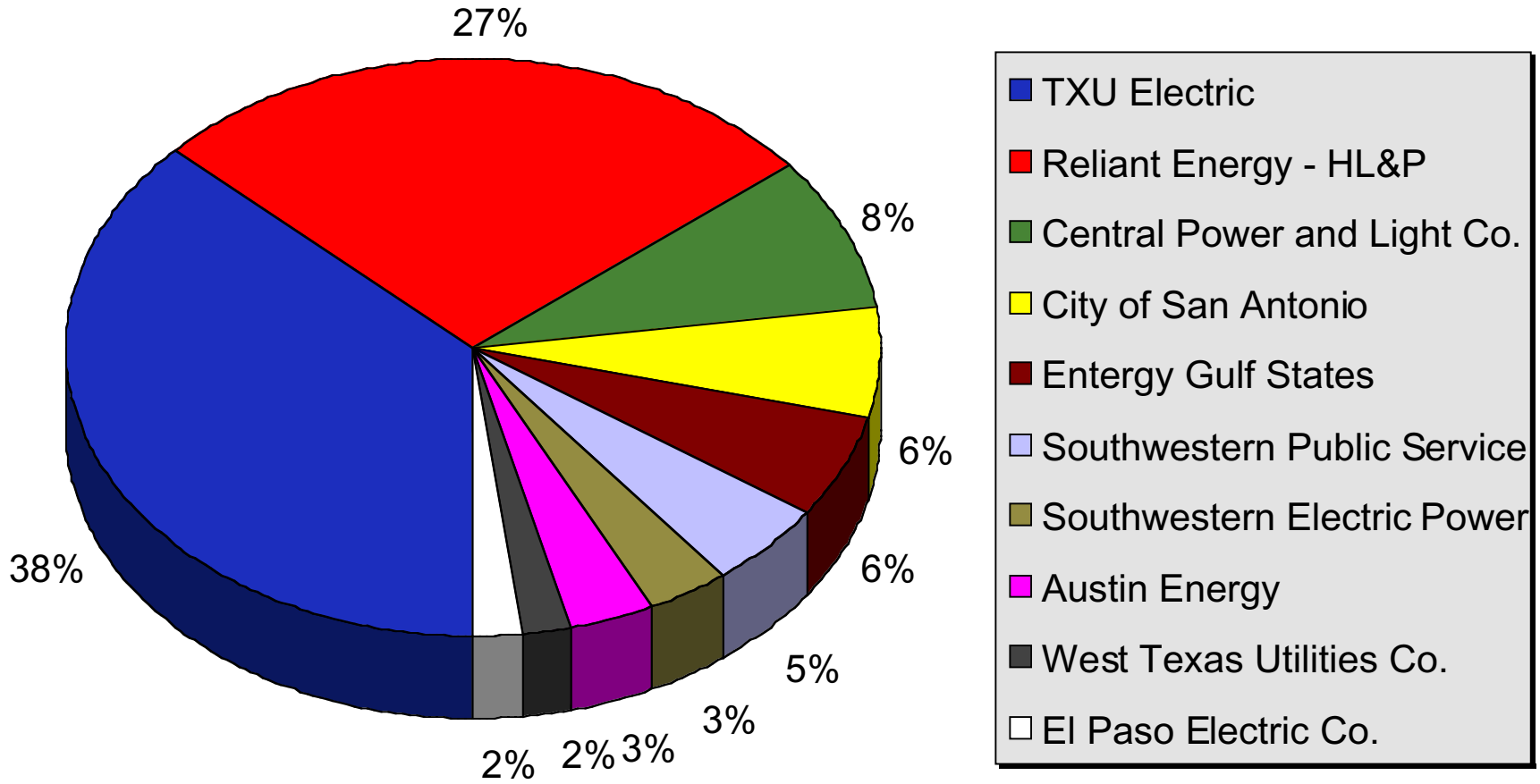
Overview

- Leadership: initiate the process; make difficult policy decisions; follow through on complaints
- Process: separate technical from non-technical issues; use consensus as appropriate
- Technical standards: focus on the regulated wires business
- Terms and conditions of service: focus on risk assignment to reduce uncertainty

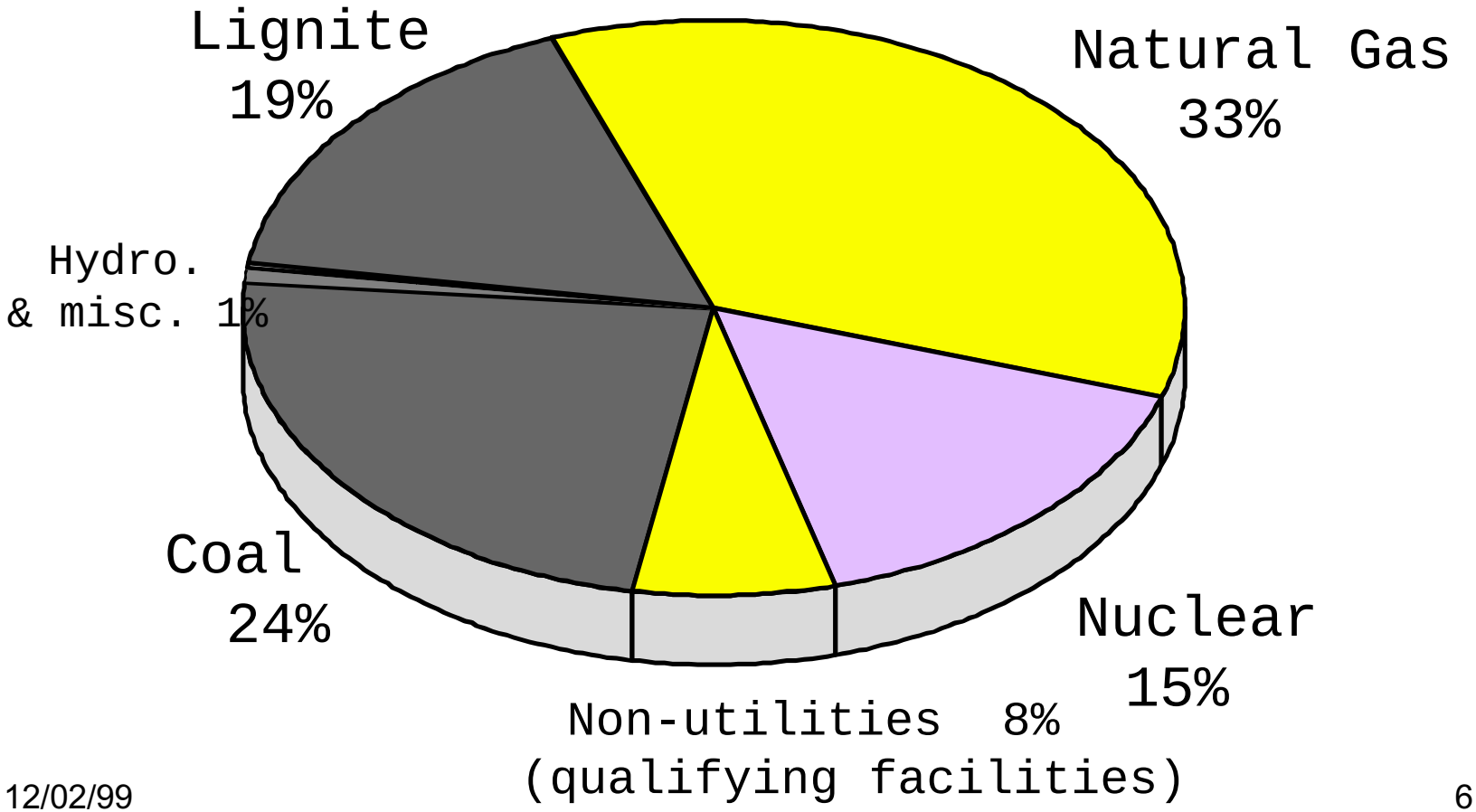
1998 Electric Industry Statistics

- 7.25 million electric customers in Texas
- 320,265 GWh (10^6 kWh) sales
  - Historical annual growth: 4.2%
  - Projected annual growth: 1.2%
- 63,807 MW peak demand
  - Historical annual growth: 4.6%
  - Projected annual growth: 1.9%
- 68,164 MW net system capacity
  - Reserve margins dropped from nearly 30% in 1994 to 12.9% in 1998

Top Ten Retail Market Shares



Fuel Mix in Texas



Merchant Plants in Texas

- 33,000+ megawatts recently completed, under construction, or announced in Texas
  - 870 MW completed in 1999
  - 5,173 MW under construction for summer 2000
  - 5,160 MW under construction for late 2000 through 2001
  - 22,145 MW announced for completion by 2003 (awaiting financing, firm contract commitments, and/or air permit approval)

Historical Treatment (1980-95) of Alternatives to Central Plants

- Rules for qualifying facilities adopted 1984
- Avoided cost proceedings set capacity value
- Net metering for small power producers (<50 kW)
- Large industrial cogenerators sold firm power to utilities under negotiated contracts
- *However*, anti-cogen and interruptible tariffs were allowed; no statewide regulations existed for standby or time-of-use tariffs; the application of small-scale resources was tiny

Alternative Resources 1995-99

- Wholesale competition legislated (1995)
- Open-access transmission and integrated resource planning rules adopted (1996)
- Eight *Deliberative Polls*™ were conducted in 1996, 1997, and 1998, resulting in a clear statement by customers for more energy efficiency and renewable resources
- Retail competition legislated (1999)

Summer 1998

- Texas economy and electric sales growth were robust
- Peak demand and capacity was monitored by the Public Utility Commission of Texas
- Reserve margin in ERCOT* dropped to 6.8% (10.7% with interruptible load)
- PUCT discussed near-term capacity options

* ERCOT: Electric Reliability Council of Texas

Oct. 1998: Response and Goal

- Load management workshop explored near-term capacity alternatives
- Task force on Interconnection of Distributed Generation was created
- PUC Chairman Pat Wood, III stated a clear goal: Develop interconnection standards by December 18, 1998.

Task Force Process

- Open membership
- Volunteer leader
- Division of responsibilities among technical and policy teams
- Workshops, telephone conferences, numerous e-mail exchanges
  - A focused effort took place from Nov. through early Dec. 1998

Interconnection Principles

- Public safety must not be compromised
- Electric service must not be degraded
- Interconnection standards must not be overly burdensome
- Regulated services must be offered on a non-discriminatory basis
- Costs must be clearly identified and borne by those who benefit
- Market forces should be relied on to the extent allowed under current law

Task Force Results

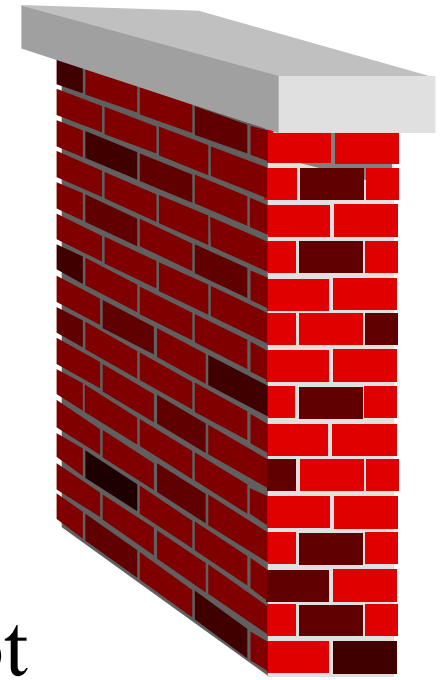
- *1999 Interconnection Guidelines* were adopted by the Public Utility Commission of Texas on February 4, 1999
- Policy issues were discussed to increase awareness of a variety of topics

Interconnection Guidelines (February 1999)

- 60 - 10,000 kW connected at 2.4 - 60 kV
- No adverse affect on other customers or utility s ability to maintain voltage and frequency
- Isolation device shall provide for visible disconnection
- System stability requirements: maintain reliability in voltage, VAR and frequency protection
- Flexibility to meet the intent of safety standards
- DG owner/operator must maintain records
- Utility has four weeks to respond to interconnection request

What Barriers Remain?

- No interconnection *standards*
- No contractual standards (high transaction costs)
- No compensation for benefits to the system (one buyer)
- Few tariff choices (tariffs were designed to *discourage*, not encourage, DG and energy efficiency)



DG in the New Statute

Sec.˚39.101.* Customer Safeguards

(b) A customer is entitled: ...

(3) to have access to providers of energy efficiency services, to on-site distributed generation, and to providers of energy generated by renewable energy resources;

* Texas Public Utility Regulatory Act (PURA) of 1999

Response to Legislation Summer 1999

- Objective: Prepare regulations that:
  - establish technical requirements to promote safe and reliable operation
  - clearly state the terms and conditions that govern the interconnection and parallel operation of on-site distributed generation
  - address standby tariffs and other policy matters

Rulemaking Process

- Workshops in July and August
  - *1999 Interconnection Guidelines* and policy discussions were the starting point for negotiations
- Three *ad hoc* teams
  - Technical Standards
  - Standard Agreement/Contract
  - Tariff and Policy Issues
- E-mail exchanges, telephone conferences, and frequent comments on working drafts

Rule 25.212 (technical standards)

- Rule 25.212 adopted Nov. 18, 1999
  - prevention of interference
  - control, protection, and safety equipment
  - inspection and startup testing
  - site testing and commissioning
  - metering

Rule 25.211 (terms & conditions)

- Rule 25.211 adopted Nov. 18, 1999:
  - Obligation to serve
  - Disconnection and reconnection
  - Incremental demand charges
  - Pre-interconnection studies and fees
  - Network interconnection of DG
  - Communications/Code of Conduct
  - Equipment pre-certification
  - Time period for applications

Other Actions Taken

- Application Form: A standard DG interconnection application form will be located in each utility s tariff book
- and there were decisions relating to a standard agreement, tariffs, pre-interconnection studies, DG pre-certification, complaints, and a manual for interconnection ...

Standard Agreement

- *Agreement for Interconnection and Parallel Operation of Distributed Generation*
  - Responsibilities of parties
  - Liability and indemnification
  - Rights of access, equipment installation, and removal and inspection
  - Disconnection of unit
  - Effective term and termination rights

Tariff Issues

- Existing standby tariffs will be modified the February 2000 filing
  - non-qualifying facilities and all classes of customers are eligible for standby power
- Distribution tariffs are under consideration in a separate unbundling proceeding

Pre-interconnection Studies

- *Utilities* will conduct service studies, coordination studies, and system impact studies
- No determination as to when studies are not needed

Cost of Studies

- No fees for interconnection studies for up to 500 kW DG if the impact is small:
  - not more than 15% of load on radial feeder
  - not more that 25% of maximum potential short circuit current on feeder
- Each utility will propose a fee schedule for >500 kW in the February 2000 filing

Stranded Costs

- No stranded costs for up to 10 MW of distributed generation
  - Sections 39.252(b) and 39.262(k)* of the new statute

* Texas Public Utility Regulatory Act (PURA) of 1999

Pre-certification by a 3rd Party

- A separate project has been established to address pre-certification of generation units

Complaints

- The standard complaint procedure will be applied with the following changes:
  - 20 days to resolve informally
  - oversight by the Commission s technical staff
  - if unresolved, the matter is placed on the agenda for consideration by the Commission at its next (every two weeks) open meeting

Interconnection Manual

- A separate project has been established to prepare a DG interconnection manual
- Issues requiring resolution:
  - Instances when a study is not needed
  - The types of studies and their cost
  - Environmental considerations relating to increased reliance on DG
  - Insurance

Markets for Grid Benefits

- Utilities are not required to purchase capacity and ancillary services from customers
- Independent System Operator procedures will affect market development

To Facilitate Interconnection ...

- Leadership (to start the process)
- Clear goals and a division of responsibilities
- A focus on regulation of the wires business
- Open membership and good communications
- Consensus-based results
- Coordinated, parallel activities, and
- Leadership (to make difficult policy calls)